

## The sub-Saharan species of *Rhamphomyia* and *Coptophlebia* with abbreviated discal venation (Diptera: Empididae)

by

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### SYNOPSIS

The sub-Saharan species of *Rhamphomyia* and *Empis* subgenus *Coptophlebia* with abbreviated discal venation are reviewed, 10 new species described and keys given. These aberrant species appear to be confined to the moist woodland and savannahs, whereas normal members of these taxa are largely confined to Macchia, dry woodland and steppe.

### INTRODUCTION

The genus *Rhamphomyia* Meigen is distinguished from *Empis* Linnaeus by the sole character of the absence of the fork ( $r_4$ ) in wing vein  $r_{4+5}$ . Occasionally specimens of *Empis* occur with this character lacking in one or both wings and more rarely specimens of *Rhamphomyia* occur with the fork  $r_4$  present in one or both wings. However, this character, although artificial, is of practical use in separating two very large genera, each of which is divided into numerous subgenera. It is not surprising that several cases of apparent parallel evolution are known in these two very closely related genera and in 1938 the late J. E. Collin added to these when he described a species of *Rhamphomyia* in which both branches of the discal vein were abbreviated as in some African species of *Empis* subgenus *Coptophlebia* Bezzi.

These species of *Coptophlebia* and *Rhamphomyia* are so similar that Collin (1938: 81) wondered 'whether the value of this fork  $r_4$  as a primary division [of *Empis* s. l. and *Rhamphomyia* s. l.] has not been overrated'. Elsewhere in these two genera great similarity in characters exists, e.g. *Rhamphomyia* s.g. *Aclonempis* Collin and *Empis* s.s., and for this reason no new subgeneric names are proposed here.

The subgenus *Coptophlebia* is separated from the other subgenera of *Empis* by the abbreviated wing vein  $m_1$ . In 1929 Collin described *E. (C.) chrysocera* from Tanganyika, a species of *Coptophlebia* in which both branches of  $m$  are abbreviated. Later Collin (1938) described two other species from Tanganyika with veins  $m_1$  and  $m_2$  abbreviated and Smith (1967, 1969) described two further species from Tanganyika and Mozambique. The species of *Coptophlebia* are mainly Oriental but have an almost world-wide distribution (fig. 1). Recently (Smith, 1969), the subgenus has been shown to be well represented in sub-Saharan Africa, but the group of species with both veins abbreviated is confined to areas north of South Africa (fig. 2).

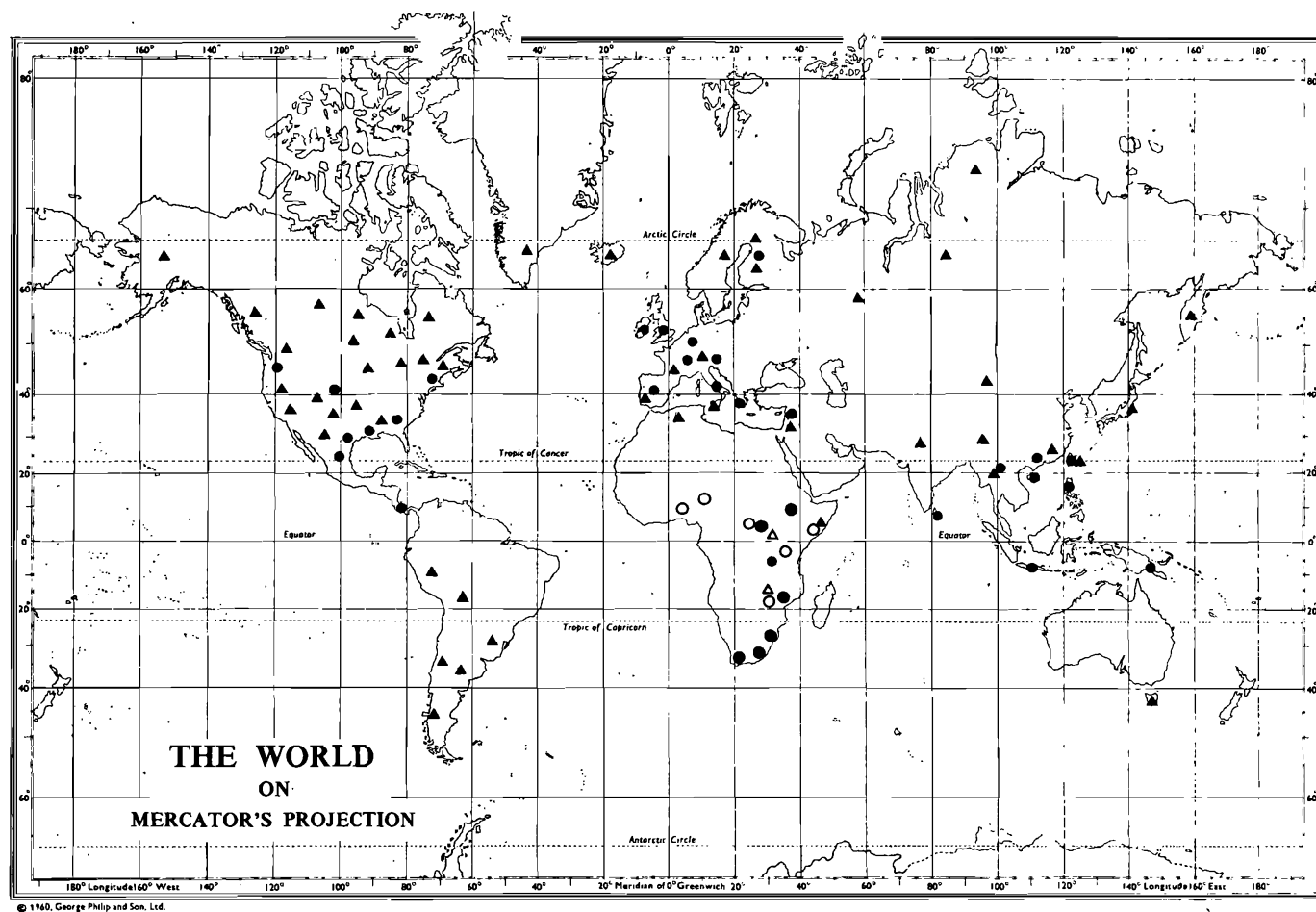


Fig. 1. World distribution of *Empis* subgenus *Coptophlebia* and *Rhamphomyia* s. l.

○ — *Coptophlebia* s.s.

● = *Coptophlebia* with extra abbreviated discal branches

▲ — *Rhamphomyia* s. l.

△ = *Rhamphomyia* with abbreviated discal branches

*Rhamphomyia* is essentially a Holarctic genus which is represented by fewer and fewer species as one goes southwards (fig. 1). In Central and South America the genus is largely replaced by *Macrostomus* Wiedemann (Smith, 1961). On the African continent *Rhamphomyia* is represented by only four species, *Rh. (Holoclera) tenuipes* Becker (1907) from Algeria, *Rh. empidiformis* Becker (1909) from East Africa, *Rh. rhodensis* Collin (1938) from Rhodesia and *Rh. maroccana* Collin (1953) from Morocco. Hitherto only *Rh. rhodensis* was known to have both  $m_1$  and  $m_2$  abbreviated. Two further species are described here, one with  $m_1$  and one with both  $m_1$  and  $m_2$  abbreviated.

The subgenus *Aclonempis* L. has two Palaearctic species with abbreviated vein  $m_1$ , *Rh. leptopus* Loew and *Rh. andalusiaca* Strobl, but is distinguished by the hairy prothoracic sternum and episternum combined with the lack of a bristle in the hind tibial posterior comb. Saigusa (1963) describes two species of *Rhamphomyia* with abbreviated  $m_1$ , but these appear to represent a distinct subgenus including *Rh. umbilicata* Loew in which the marginal vein of the discal cell is evanescent, the males have well-separated eyes and enlarged tarsal claws, and the females have non-pennate legs.

The map (fig. 2) shows the distribution of the African species of *Empis* subgenus *Coptophlebia*, and *Rhamphomyia* plotted on a modified Oxford vegetation map of Africa. It can be seen that these aberrant species are confined to the moist woodlands and savannas, whereas *Coptophlebia* and *Rhamphomyia* s.s. are largely confined to Macchia, and to dry woodland and steppe. Where the last two appear to invade the regions of the first two it is nearly always in montane areas, near the margins of the vegetational zones. No data are yet available from Madagascar.

Key to the species of *Rhamphomyia* Meigen with abbreviated discal branches ( $m_1$ ,  $m_2$ )

1. Wing brownish-tinged and only vein  $m_1$  abbreviated (fig. 3); legs dark brownish  
**taylori** sp. n.
- Wing clear with both  $m_1$  and  $m_2$  abbreviated (figs. 4, 5); legs mostly pale . . . 2
2. Dusting of head and thorax pale grey; thorax with a very obvious polished black spot on each side above wing bases; wing veins and microtrichia very pale,  $m_1$  slightly curved forward at tip; scutellum with only one pair of marginal bristles  
**rhodensis** Collin
- Dusting of head and thorax yellowish-grey; thorax without obvious spot due to dusting; wing veins and microtrichia darker,  $m_1$  straight; scutellum with 2 pairs of marginal bristles, the outer pair weaker . . . . . **collini** sp. n.

#### ***Rhamphomyia taylori* sp. n.**

A blackish species with dark legs and with only vein  $m_1$  not reaching margin.

♀ Occiput, frons and face black, dusted grey. Frons about 3 times ocellar width and parallel-sided. Face slightly wider than frons and widening below. Frons with 4 bristles down each side. Face bare. Two short ocellar bristles with some short bristles behind. Occiput with two rows of postocular bristles, the anterior row curved forward over eyes above; some bristly hairs below. Antennae blackish; first segment nearly twice length of second; third segment about  $1\frac{1}{2}$  times length of first and second segments together with a terminal style of about  $\frac{1}{3}$  its length. Palpi short and slender, dark and bristly below. Proboscis dark, between  $2\frac{1}{2}$  and 3 times as long as head is deep.

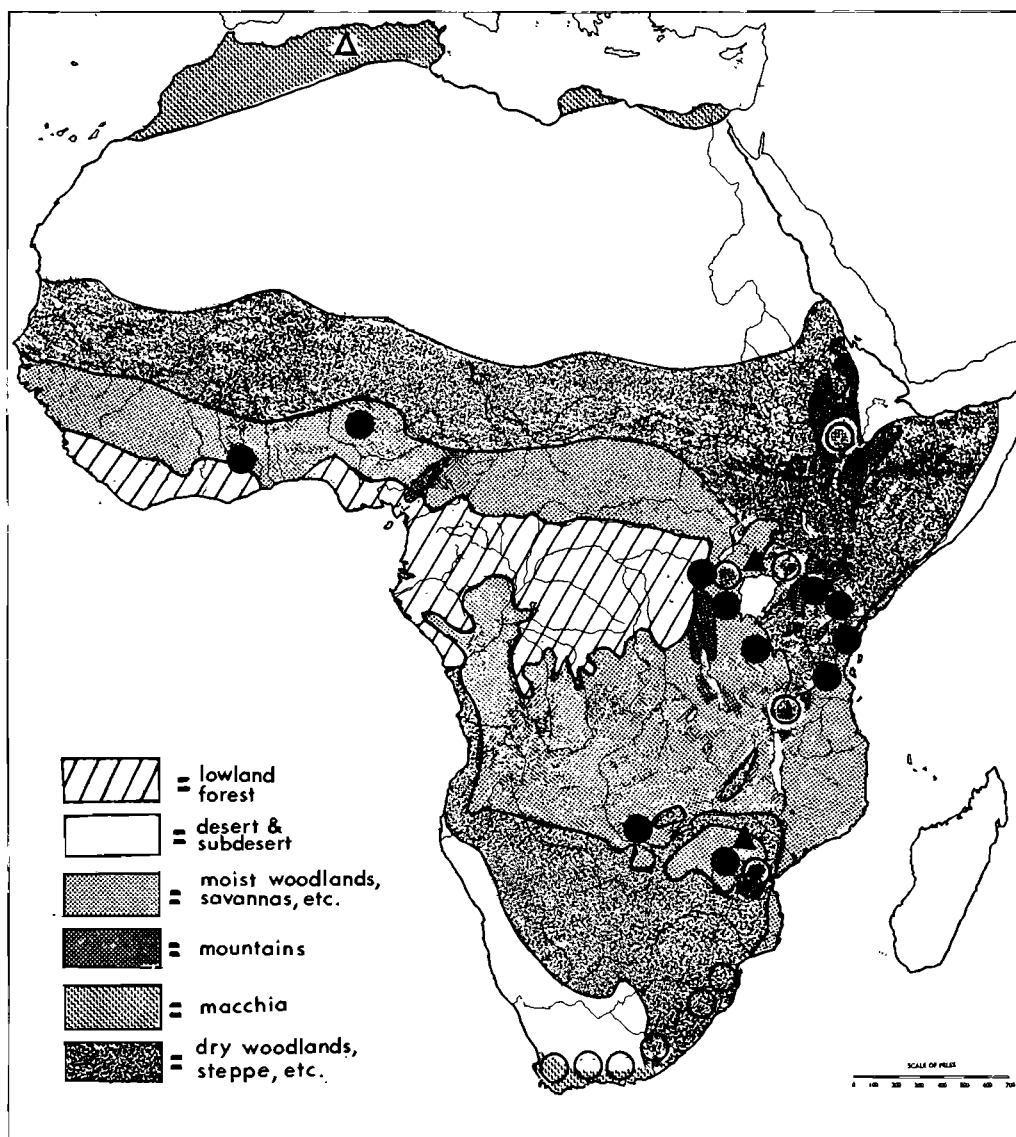


Fig. 2. African distribution of *Empis* subgenus *Coptophlebia* and *Rhamphomyia* s. l.  
 ● = *Coptophlebia* with abbreviated discal branches    ▲ = *Rhamphomyia* with abbreviated discal branches  
 ○ = *Coptophlebia* s. l.    △ = *Rhamphomyia* s. l.

Thorax: black, greyish dusted with 3 narrow black stripes under line of acrostichal and dorsocentral bristles and corner of postalar callus somewhat yellowish. A humeral bristle with numerous bristly hairs in front; a slender posthumeral with some short hairs in front; acrostichal bristles biserial and rather long (occasionally triserial); dorsocentrals pluriserial, rather long and with one or two stronger posterior bristles; two distinct notopleural bristles with several hairs in front; a supra-alar with one or two weaker bristles in front and a rather long slender postalar bristle. Scutellum black, dusted greyish and with apparently 2 pairs of marginal bristles, though in the holotype there are two extra bristles between the normal pair on one side. Prothoracic collar with a circlet of slender bristles. Prothoracic sternum with a few bristles on upper outer corner. Metapleuron with about 15 bristles and hairs. Episterna bare.

Abdomen: broad, dark brown, dulled by greyish dust, short haired and with two slender anal papillae.

Legs: dark brown. Femora rather long-haired, but without strong bristles; middle femur with a series of short pennate hairs posteroventrally; hind femur swollen, bristly posteroventrally on distal half, pennate dorsally for whole length and posteroventrally at tip. Tibiae rather long haired posterodorsally, but without distinct bristles except for hind tibia which has some slender antero- and posterodorsal bristles. Basitarsi with weak bristles below.

Wings (fig. 3): faintly brownish-tinged, with dark veins, only upper branch of  $m_1$  abbreviated. Halteres dirty yellowish.

Length: 4.0 mm.

Holotype ♀, UGANDA: Kawanda, 3 April 1944 (*T. H. C. Taylor*). In the British Museum (Natural History), London.

#### *Rhamphomyia rhodesiensis* Collin

*Rhamphomyia rhodesiensis* Collin, 1938, *Proc. R. ent. Soc. Lond.* (B) 7: 82.

A greyish species with mainly yellow legs which in the female are partly pennate. Episternum with one or two hairs and hind tibia with a tiny bristle in posterior apical comb. Wings (fig. 4) with two upper veins from discal cell abbreviated and thus not reaching the wing margin. Male genitalia as illustrated (fig. 7).

Described from Rhodesia: Salisbury, 14 December 1936 on flowers of *Mentha sylvestica* (*A. Cuthbertson*). Type ♂ in British Museum (Natural History), London.

#### *Rhamphomyia collini* sp. n.

Very similar to *Rh. rhodesiensis* Collin, but differing as follows:

♂ Dusting of head, thorax and scutellum more yellowish-grey; thorax evenly dusted without a polished black spot on each side above wing-bases; thoracic bristles longer, scutellum with a weak bristle on each side in addition to the strong sub-apical pair.

Genitalia as illustrated in fig. 6.

Legs with longer, more slender bristles and hairs; hind tibia not so thickened distally; hind tarsi not so thickened and not annulated (tarsi of other legs missing).

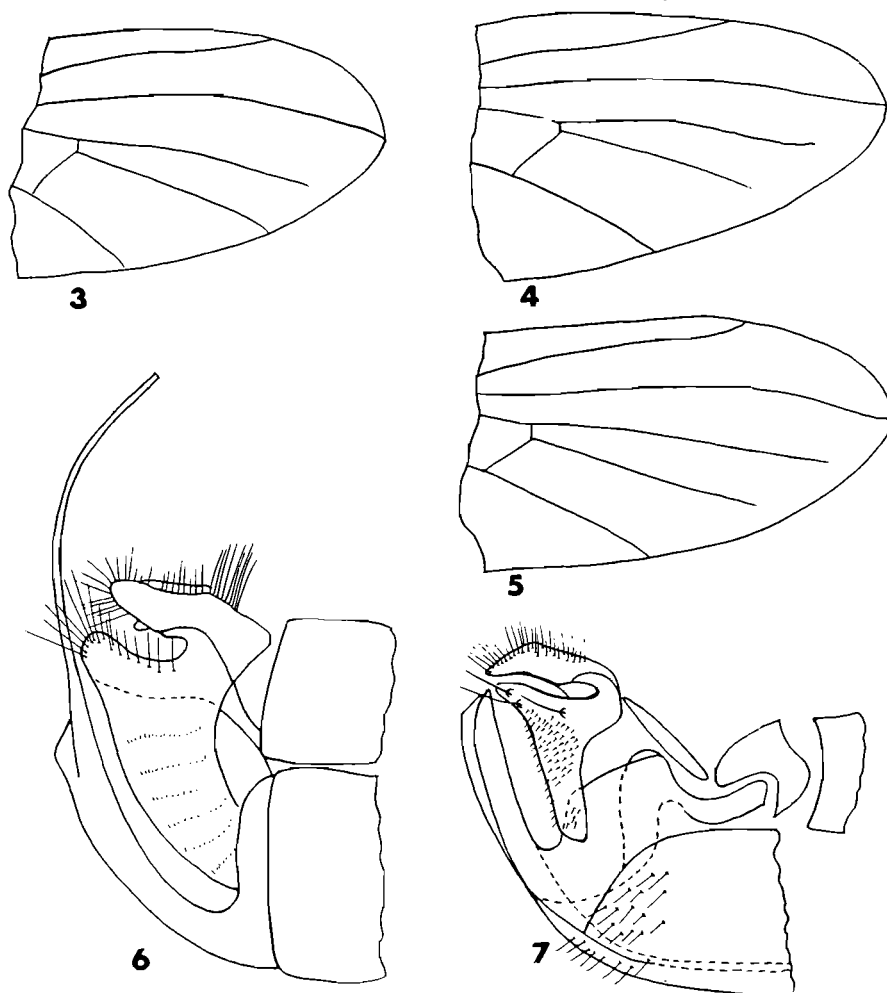
Wings (fig. 5) with darker veins and microtrichia, both  $m_1$  and  $m_2$  straight.

Length: 3,5 mm.

Holotype ♂, SOUTHERN RHODESIA: Salisbury, January 1935 (*A. Cuthbertson*). Presented by the Imperial Institute of Entomology to the British Museum (Natural History), London (B.M. 1938-169).

Key to the known species of *Coptophlebia* Bezzi with two abbreviated discal branches ( $m_1$ ,  $m_2$ )

1. Legs partly yellow . . . . . 2
- Legs entirely black or dark brown (if tibia yellow at extreme base see *vina* sp. n.) . . . . . 8
2. Femora dark brown-blackish, tibiae mostly yellow . . . . . 3
- Femora and tibiae mostly or entirely yellow . . . . . 6
3. Wings brownish tinged in both sexes; tibiae yellow, only blackish at extreme tip, legs otherwise blackish . . . . . *aberdarensis* sp. n.
- Wings clear (at least in ♂♂, ♀♀ unknown), legs with tibiae more extensively darkened . . . . . 4
4. Anal vein faint; ♂ eyes touching for a short distance above; sixth sternite of ♂ with broad median projection . . . . . *lindneri* Smith
- Anal vein distinct; ♂ eyes touching for longer distance above; sixth sternite of ♂ without broad median projection . . . . . 5
5. Dorsocentrals uniserial; front tarsi long-haired; basitarsi with some hairs twice as long as basitarsus is thick . . . . . *namwamba* sp. n.
- Dorsocentrals pluriserial; front tarsi short-haired; basitarsi with only a few bristles a little longer than basitarsus is thick . . . . . *portia* sp. n.
6. Larger species (8 mm), with long brown wings (fig. 19) and very long proboscis (about  $5\frac{1}{2}$  times as long as head is deep) . . . . . *jacksoni* sp. n.
- Smaller species (3-3,25 mm) with shorter clear wings (fig. 18) and proboscis at most twice as long as head is deep . . . . . 7
7. Hind tibiae of male curiously modified at base to accommodate a tuft of strong posterior bristles at tip of hind femora (fig. 14) . . . . . *valga* Collin
- Hind femora and tibiae of male simple . . . . . *appendiculata* Collin
8. Wings brown in both sexes; legs partly pennate in both sexes . . . . . 9
- Wings clear in male, brown in female (where known); only female legs pennate . . . . . 10
9. Antennae entirely yellow; thorax with obvious lyre-shaped markings . . . . . *lyra* Smith
- Antennae black; thorax without obvious lyre-shaped markings, although with similar dust-pattern . . . . . *barbitos* sp. n.
10. Third antennal segment yellow . . . . . *chrysocera* Collin
- Third antennal segment black . . . . . 11
11. Hind tibia with bristles above shorter than tibia is deep . . . . . *cuthbertsoni* sp. n.
- Hind tibia with bristles above obviously longer than tibia is deep . . . . . 12
12. Upper eye facets not obviously enlarged; halteres yellow . . . . . *vina* sp. n.
- Upper eye facets obviously enlarged; halteres with black knob . . . . . 13



Figs. 3-7. (3) *Rhamphomyia taylori* sp. n., distal half of wing; (4) *Rhamphomyia rhodesiensis* Collin, distal half of wing; (5) *Rhamphomyia collini* sp. n., distal half of wing; (6) *Rhamphomyia collini* sp. n., male genitalia in lateral view; (7) *Rhamphomyia rhodesiensis* Collin, male genitalia in lateral view.

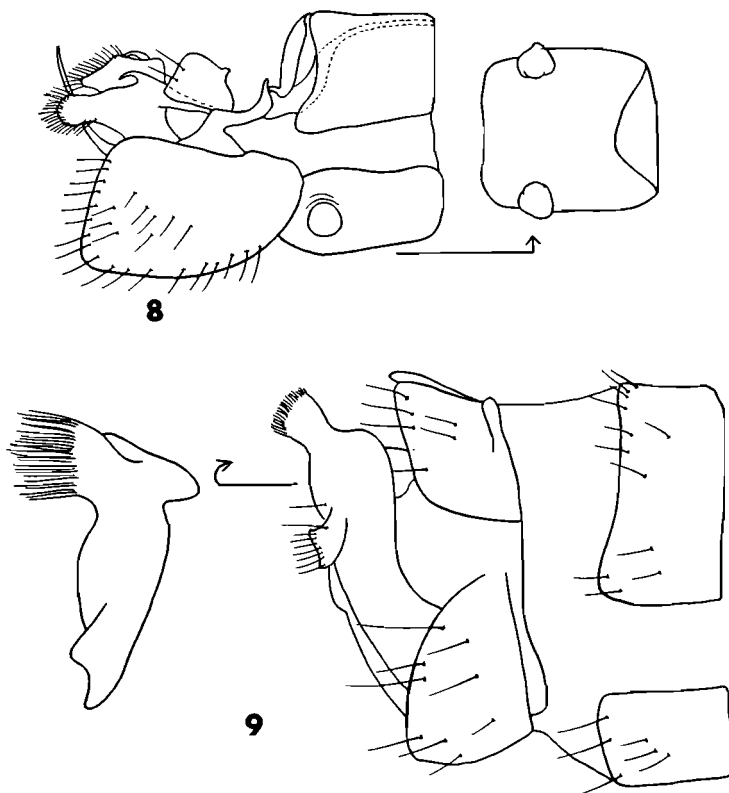
13. Third antennal segment lanceolate; humeri yellowish; abdomen yellowish at base; discal cell truncate (♂ only known) . . . . . **machipandensis** Smith  
 — Third antennal segment short and suddenly constricted distally; humeri blackish; abdomen dark brown; discal cell more pointed . . . . . **edwardsi** sp. n.

***Empis (Coptophlebia) aberdarensis* sp. n.**

♂ Head: black, dulled by greyish dust. Eyes with upper facets a little larger, touching for long distance above, thus frons reduced to small triangle, but with a distinct bristle on each side just above antenna. Face board, dusted greyish above, shining black below and

with a distinct black bristle on each side above, close to point of antennal insertion. Ocellar triangle prominent, ocellar bristles long and slender and with numerous bristly hairs behind. Occiput with long bristly hairs, a postocular series curved forward over eye margins above and with several rows of curved hairs behind and rather more straggly hairs below. Antennae black, first segment about  $1\frac{1}{2}$  times length of second segment, both segments bristly; third segment  $2\frac{1}{4}$  times length of first and second segments together with a terminal arista of about  $\frac{4}{5}$  its length. Proboscis brownish, about 3 times as long as head is deep. Palpi slender, dark with yellow tips and with long bristly hairs below.

Thorax: greyish-dusted, but with a broad dark stripe under each line of dorsocentrals which broadens behind humerus and in area of prescutellar depression, a narrow dark stripe under acrostichals, more easily visible if viewed from behind, a dark patch above each wing base. Acrostichals long and slender, biserial; dorsocentrals long and slender, pluriserial merging with posthumeral hairs anteriorly and each series ending in a single strong prescutellar bristle; a slender humeral bristle with numerous bristly hairs in front; 4 strong notopleural bristles with bristly hairs in front and above; 2 or 3 strong supra-alars



Figs. 8-9. (8) *Empis (Coptophlebia) aberdarensis* sp. n., male genitalia in lateral view and 7th sternite in ventral view; (9) *E. (C.) namwamba* sp. n., male genitalia in lateral view.



and some bristly hairs; a strong postalar. Scutellum dark brownish with a strong pair of crossing apical bristles and a weaker bristle on each side. Prothoracic collar with a series of bristles and some longer bristly hairs laterally. Prothoracic sternum hairy above. Pleurae heavily greyish dusted; metapleuron with about 25 strong bristles and hairs.

Abdomen: dark but completely dusted silvery white, the silvery appearance shifting with different illuminations; long haired at sides of first 3 segments, otherwise short haired. Genitalia (fig. 8) dark brown.

Legs: coxae black, dusted greyish and femora dark brown, tibiae yellow with brownish tips, tarsi blackish brown. Femora with rather long slender bristly hairs below, short haired above; hind femur with distinct irregular anterodorsal bristles on distal half. Front tibia with anterodorsal bristles and longer posterodorsals and with a circlet of bristles about tip, with rather dense long hairs behind; middle tibia with strong antero- and posterodorsals and two spaced, more dorsal bristles, two anteroventral bristles in distal half with a shorter more anterior bristle at about distal  $\frac{3}{4}$ ; hind tibia with strong antero- and posterodorsal bristles, weaker dorsal bristles, weak posterodorsal bristles distally, one or two stronger posterior bristles medially and some strong irregular anteroventrals distally. Basitarsi bristly above and below, other tarsal segments with bristles about tip.

Wings: brownish, discal cell not very truncate, the abbreviated veins  $m_1$  and  $m_2$  appearing almost straight. Halteres yellow.

♀ Resembling ♂, but eyes broadly separated by about 3 times the width of an ocellus, dusted greyish except for a very narrow shining black median line from just above middle down to antennae. All bristles and hairs shorter. Abdomen without silvery reflections. All femora with posteroventral pennate hairs and hind femora with posteroventral and antero-dorsal pennate hairs. Front tibia sometimes with a few short posteroventral pennate hairs at base.

Length: 6.0 mm.

Holotype ♂, paratypes 4 ♂, 3 ♀, KENYA: Nairobi, June 1937, caught on Compositae (*van Someren*). Presented by the Commonwealth Institute of Entomology to the British Museum (Natural History), London (B.M. 1959—507).

Paratypes 3 ♂, KENYA: Aberdare Range, 28 October 1934, Nyeri Track, 3 200–3 350 m (*F. W. Edwards*). Paratypes 2 ♂, KENYA: Aberdare Range, 27 October 1934, Mt. Kinangop, 2 440–2 740 m (latter altitude cedar forest) (*F. W. Edwards*). All in the British Museum (Natural History), London (B.M. 1935—203).

Other (damaged) specimens from the Aberdare Range are not included in the type series.

A ♂ from UGANDA: Ruwenzori Range, Fort Portal, 1 500 m, December 1934–January 1935 (*F. W. Edwards*) is somewhat intermediate between this species and *E. (C.) portia* sp. n. The wings are distinctly brownish tinged and the genitalia differ only very slightly, the lateral swellings on the 6th sternite resemble *E. (C.) aberdarensis* more closely than *E. (C.) portia*. It is clear that much concentrated collecting will be necessary before the speciation of *Coptophlebia* in the Ruwenzori Ranges is fully understood.

***Empis (Coptophlebia) namwamba* sp. n.**

Very similar to *E. (C.) edwardsi*, but differing as follows:

Proboscis distinctly shorter, about  $\frac{5}{8}$  head height. Humeri and postalar calli reddish-yellow; prothoracic collar and sternopleura partly reddish-yellow. Femora more or less yellowish on basal half; tibiae yellowish, darkened distally, middle tibiae distinctly blackish at tip; bristles on front legs, especially on tarsi, longer. Halteres yellow. Genitalia differing as illustrated (fig. 9).

Holotype ♂, paratypes 2 ♂, UGANDA, Ruwenzori Range, Namwamba valley, 2 160 m (*F. W. Edwards*). In the British Museum (Natural History), London (B.M. 1935—203).

***Empis (Coptophlebia) portia* sp. n.**

Resembling *E. (C.) namwamba* and *E. (C.) edwardsi*, but a little larger and distinguished by the following combination of characters:

Proboscis a little more than twice as long as head is deep. Thorax black with reddish-yellow humeri and postalar calli with narrow greyish stripes between acrostichal and dorso-central rows of bristles. Acrostichal and dorsocentral bristles finer and more hair-like, becoming stronger behind, the acrostichals biserial, the dorsocentrals pluriserial and merging with the posthumeral hairs anteriorly. Genitalia and pregenital tergites and sternites as illustrated (figs. 10–12). Legs dark brown except for yellowish basal half of all tibiae and without bristles and hairs rather short. Hind femur with a rather concentrated group of short bristles below in basal third, tibiae without strong bristles below, tarsi short haired. Wings clear, discal cell as long as vein  $m_2$ . Halteres yellow.

Length: 4 mm.

Holotype ♂, UGANDA: Ruwenzori Range, Fort Portal, 1 520 m December 1934–January 1935 (*F. W. Edwards*). In the British Museum (Natural History), London (B.M. 1935—203).

***Empis (Coptophlebia) lindneri* Smith**

*Empis (Coptophlebia) lindneri* Smith, 1967, *Stuttg. Beitr. Naturk.* 179: 9.

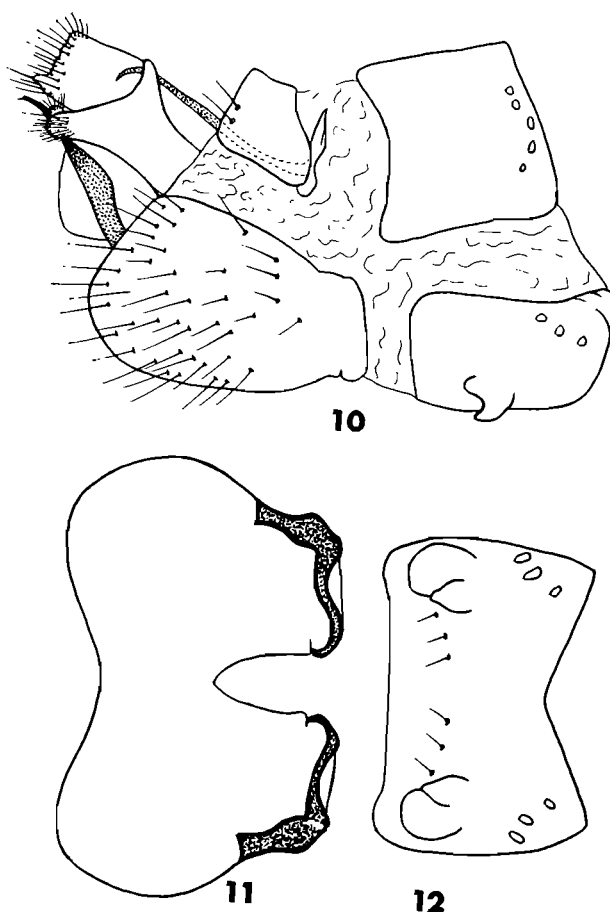
This species closely resembles *E. (C.) namwamba* and *E. (C.) portia*, but is distinguished by the key characters, especially the structure of the male genitalia and pregenital tergites (figures in Smith 1967). Length: 4,5 mm.

Distribution: Tanzania, Msingi (type locality).

Known only from the holotype ♂ in the Staatliches Museum für Naturkunde, Stuttgart.

***Empis (Coptophlebia) jacksoni* sp. n.**

♂ Head: black dulled by greyish dust. Frons long, striate across middle, about as wide as an ocellus above antennae, narrowing at middle and widening to include anterior ocellus above. Face very short with long epistoma. Ocellar bristles slender, occiput with some longer bristles curved forward over eye margins above and with some shorter bristles behind, some longer hairs below behind mouth. Eye facets a little smaller above. Antennae blackish; first segment twice length of second segment, both segments with bristly hairs; third segment



Figs. 10-12. (10) *Empis (Coptophlebia) portia* sp. n., male genitalia in lateral view; (11) *E. (C.) portia*, 8th sternite in dorsal view; (12) *E. (C.) portia*, 7th sternite in ventral view.

about  $1\frac{1}{2}$  times length of first segment with a terminal arista of a little less than length of first antennal segment. Proboscis very long and slender,  $5\frac{1}{2}$  times as long as head is deep; abrum yellowish, galea blackish. Palpi very short with long black hairs and a very long black apical bristle.

Thorax: dark brownish with yellowish humeri and postalar calli. A distinct humeral bristle with weaker bristles below; a posthumeral and 3 long notopleurals; a strong supra-alar with a weaker bristle in front and a strong postalar; acrostichals slender, biserial; dorsocentrals a little longer than acrostichals, biserial with two long strong bristles in each series behind. Scutellum yellowish with a pair of crossing apical bristles. Prothoracic collar yellowish with a series of black bristles. Prothoracic sternum yellowish with black bristly hairs above. Pleurae yellowish with mesopleuron, hypopleuron and metapleuron largely brownish. Metapleuron with about 23 black hairs and bristles, some quite long.

Abdomen: first 3 segments broadly yellowish at base, remainder blackish. Longer hairs at sides and on hindmargins, otherwise short haired. Genitalia as illustrated (fig. 12).

Legs: coxae yellowish, trochanters yellowish, darkened distally, femora yellowish with darkened tips, tibiae dark brown with yellowish base. Tarsi dark brown. Front femur with weak antero- and posteroventral bristles; middle femur with anteroventral and more numerous long slender posteroventrals; hind femur with weak anteroventrals, longer posteroventrals. Front tibia with weak anterodorsals and long slender posterodorsals of which one at middle and another at tip are longest; middle tibia with long antero- and posterodorsals and anteroventrals, and weak posteroventrals, a few of which are more distinct towards tip; hind tibia with long posterodorsals, weaker anterodorsals and anteroventrals. Basitarsi all very long and slender, all tarsal segments very bristly, long bristles above, shorter, stouter bristles below.

Wings (fig. 19): brownish, upper branch ( $r_4$ ) of 4th longitudinal vein straight, discal cell blunt ended with both branches of discal vein ( $m_1$  and  $m_2$ ) abbreviated. Halteres with reddish-yellow stem and blackish knob.

Length: body 8,0 mm, wing 7,5 mm.

♀ unknown.

Holotype ♂, paratypes 2 ♂, BELGIAN CONGO: Beni, Ituri Forest, September 1946 (T. H. E. Jackson). In the British Museum (Natural History), London (B.M. 1946—354).

*Empis (Coptophlebia) valga* Collin

*Empis (Coptophlebia) valga* Collin, 1938, *Proc. R. ent. Soc. Lond.* (B) 7: 83.

This species is distinguished at once in the ♂ by the femora which are curiously modified to accommodate a tuft of strong bristles on the hind femur (fig. 14). Wing as in fig. 18.

Length: 3,25 mm.

Distribution: Ghana, Obuasi, Ashanti.

Known only from the holotype male in the British Museum (Natural History), London.

*Empis (Coptophlebia) appendiculata* Collin

*Empis (Coptophlebia) appendiculata* Collin, 1938, *Proc. R. ent. Soc. Lond.* (B) 7: 83.

This species is distinguished by the following combination of characters:

Legs yellow except for darkened tips of tibiae and tarsal segments; clear wings; proboscis at most twice as long as head is deep; hind femora and tibiae of ♂ simple. Length: 3,0 mm.

Distribution: Ghana, Obuasi, Ashanti.

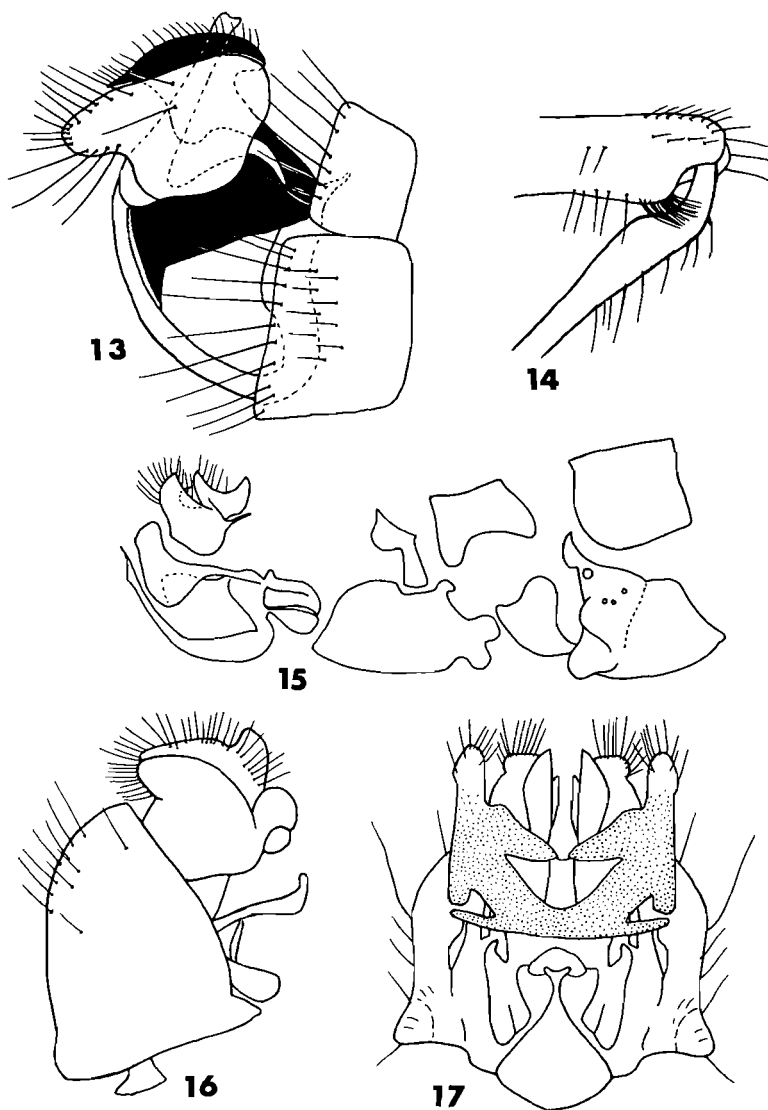
Known only from the holotype and one other ♂ in the British Museum (Natural History), London.

*Empis (Coptophlebia) lyra* Smith

*Empis (Coptophlebia) lyra* Smith, 1967, *Stuttg. Beitr. Naturk.* 179: 11.

This species is easily recognized by the blackish lyre-shaped marking on the thorax; black legs; entirely yellow antennae; brownish wings in both sexes; partly pennate legs in both sexes.

Length: 5,0 mm.



Figs. 13–17. *Empis (Coptophlebia) jacksoni* sp. n., male genitalia in lateral view; (14) *E. (C.) valga* Collin, male hind femur and tibia in posterior view; (15) *E. (C.) chrysocera* Collin, male genitalia in lateral view (macerated with sternite and tergite separated); (16) *E. (C.) barbitos* sp. n., male genitalia in lateral view; (17) *E. (C.) barbitos*, male genitalia in ventral view.

In the original description I did not describe the middle legs of the male which were missing in the holotype. From a study of additional material I now do so.

Middle femur with slender subpennate hairs antroventrally, long pennate hairs posteroventrally on distal half and long slender bristles basally, and with a series of long slender

bristles above. Middle tibia with long pennate hairs anterodorsally except at extreme base, posterodorsal bristles, short anteroventral bristles and longer posteroventrals. Tarsi bristly, without pennate hairs.

Adults of this species sit in a characteristic position with the front and middle pairs of legs together and inclined forwards at an angle of *ca.* 40° while the hind legs lie parallel and close to the abdomen (Smith, 1967: 11, fig. 21a).

Distribution: Kenya, Kwali Forest, type locality; Rhodesia, Livingstone, Victoria Falls.

Holotype ♂ and 3 ♀ paratypes in the British Museum (Natural History), London; 2 ♂ and 3 ♀ paratypes in the Staatliches Museum für Naturkunde, Stuttgart.

### ***Empis (Coptophlebia) barbitos* sp. n.**

Very similar to *E. (C.) lyra* Smith, but differing as follows:

♂ Antennae black. Thorax without the obvious lyre-shaped markings of *E. (C.) lyra*, though the basic pattern of dusting is very similar. Middle femur with long anterodorsal bristles and long pennate hairs posteroventrally on distal half, with long slender bristles on basal half; hind femur only short pennate posteroventrally at extreme tip without pennate hairs anteroventrally and with rather long anterodorsal and dorsal bristles (short in *E. (C.) lyra*). Front tibia with shorter, weaker posterodorsals; hind tibia short pennate for short distance before middle, but with slender bristles basally and on distal half. Abdomen brownish, silvery dusted with genitalia differing as illustrated (figs. 16, 17).

Length: 4.0 mm.

♀ unknown.

Holotype ♂, RHODESIA: Cleveland Dam, Salisbury, 15 January 1939 (*A. Cuthbertson*). Presented by the Commonwealth Institute of Entomology to the British Museum (Natural History), London (B.M. 1959—507). At flowers of *Clematis stanleyi* Hooker (Ranunculaceae). The specimen also bears a label 'eye in life, red'.

In the left wing of the holotype vein  $m_2$  is almost complete.

### ***Empis (Coptophlebia) chrysocera* Collin**

*Empis (Coptophlebia) chrysocera* Collin, 1929, *Proc. ent. Soc. London*. 4: 110.

This species is distinguished by the following combination of characters: dark legs; wings clear in ♂, brown in ♀; only female legs pennate and third antennal segment yellow; genitalia as illustrated (fig. 15).

Length: 3.5–4.0 mm.

Distribution: Tanzania, Morogoro, type locality; Rhodesia, Victoria Falls.

'Numerous specimens preserved in spirit.' One pair of co-types in the British Museum (Natural History), London; remainder in the Hope Department of Zoology (Entomology), Oxford.

### ***Empis (Coptophlebia) cuthbertsoni* sp. n.**

♂ Head: black, dusted greyish. Eyes with upper facets enlarged, touching above, reducing frons to a narrow triangle. Face about 3 times width of an ocellus. Ocellar bristles short and weak. Occiput with weak postocular bristles. Antennae blackish, first segment

about twice length of second, both segments with short hairs; third segment  $1\frac{1}{2}$  times length of first and second segments together and with a terminal arista of about  $\frac{1}{3}$  length of the third segment. Proboscis a little more than twice as long as head is deep. Palpi short, dark with yellowish tip and short haired.

Thorax: black, dusted light greyish, heavily so on prescutellar depression, with 3 brownish stripes on disc under lines of acrostichal and dorsocentral bristles; humeri and postalar calli reddish-yellow. Bristles short; acrostichals biserial; dorsocentrals irregularly biserial ending uniserial with a few longer bristles; a humeral bristle with a few short hairs in front; a weak posthumeral; a notopleural with a weaker bristle above, another below and with numerous short hairs in front; a weak supra-alar and a stronger postalar. Scutellum black with a pair of short crossing apical bristles and an outer bristle on each side. Pro-



18



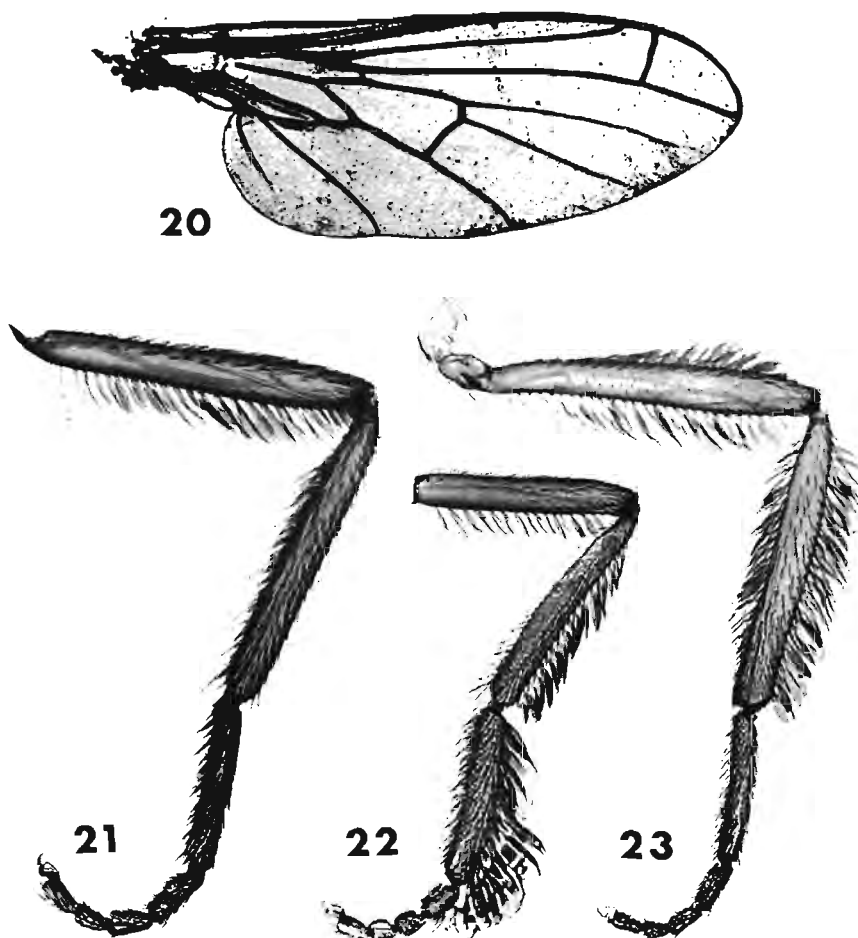
19

Figs. 18-19. (18) *Empis (Coptophlebia) valga* Collin, ♂ wing; (19) *Empis (Coptophlebia) jacksoni* sp. n., ♂ wing.

thoracic collar with a series of short bristles. Prothoracic sternum with a few very short hairs on upper outer corner. Pleurae dark brownish-blackish, dusted greyish. Metapleuron with about 20 black hairs and bristles.

Abdomen: dark brownish, somewhat yellowish at base, clothed with short dark hairs with longer dark hairs at sides. Male genitalia, pregenital tergites and sternites as in fig. 24.

Legs: dark brown, short haired. Front femur with slender anteroventral bristles, longest basally and weak posteroventrals; middle femur with slender anteroventrals, longest basally and long slender posteroventrals; hind femur with short anteroventrals, longer posteroventrals and very slender anterodorsals with some coarser bristles above. Front tibia with short dorsal bristles; middle tibia with short posterodorsal bristles, hardly distinguishable from the coarse bristly posterior hairs; hind tibia with short antero- and



Figs. 20-23. (20) *Empis (Coptophlebia) cuthbertsoni* sp. n., ♂ wing; (21) the same, ♀ middle leg; (22) the same, ♀ front leg; (23) the same, ♀ hind leg.

posterodorsal bristles. Front basitarsus somewhat thickened and a little longer than remaining tarsal segments together; middle basitarsus obviously shorter than the remaining tarsal segments; hind basitarsus a little shorter than remaining tarsal segments; all tarsi with short bristles above and below.

Wings (fig. 20): clear with yellowish veins. Discal cell rather blunt ended and with both branches ( $m_1$  and  $m_2$ ) abbreviated. Halteres with reddish-brown stem and black knob.

♀ Similar to ♂, but differing as follows:

Frons more than 3 times width of an ocellus and shining black. Legs (figs. 21-23) pennate as follows: front femur long pennate anteroventrally, short pennate posteroventrally; middle femur long pennate posteroventrally; hind femur long pennate postero- and anteroventrally, shorter pennate above, but longer anterodorsally than posterodorsally.



Front tibia long pennate above, the hairs becoming broader towards tip, short pennate below at tip only; middle tibia with short strong anteroventral bristles and medium pennate posteroventrally; hind tibia long pennate posterodorsally and anteroventrally. Front basitarsus with long broad pennate hairs above and shorter pennate hairs below, succeeding 2 tarsal segments with short pennate hairs above. Tarsi otherwise not pennate. Wings brownish.

Length: 4.0 mm.

Holotype ♂, paratypes ♂, 5 ♀, RHODESIA: Wedza, 26 December 1938 (*A. Cuthbertson*). Presented by the Commonwealth Institute of Entomology to the British Museum (Natural History), London (B.M. 1959—507).

Some of the paratype females bear additional labels 'eyes red in life' and 'at flowers of *Scabiosa*' and all the females are additionally labelled 'Sengensi River'.

***Empis (Cotophlebia) vina* sp. n.**

♂ Head: black, dusted greyish. Eyes touching for considerable distance above, upper facets enlarged, but not so obviously as in other species of the subgenus. Face broad and largely shining on lower half. Ocellar bristles rather long and slender. Occiput with long slender black hairs close to eye-margin with a series of shorter hairs behind. Antennae black, first segment a little longer than first; third segment a little longer than first and second segments together with a terminal arista a little more than half its length. Proboscis distally, black basally and a little more than twice as long as head is deep; palpi dark with a yellowish tip and a black bristle below.

Thorax: black, lightly dusted greyish with a narrow black median stripe and broader black lateral stripes, more or less distinct with shifting light. Hairs and bristles rather long. Acrostichals biserial; dorsocentrals pluriserial; a slender humeral with numerous long hairs around it; two long upper notopleural bristles and a weaker bristle below; a long slender supra-alar with several long hairs above and a long strong postalar. Scutellum black, lightly greyish dusted with a strong apical pair of bristles and a weak outer pair. Prothoracic collar with long bristles. Prothoracic sternum with long bristly hairs above. Pleurae black, dusted greyish. Metapleuron with about 20 black bristles and hairs.

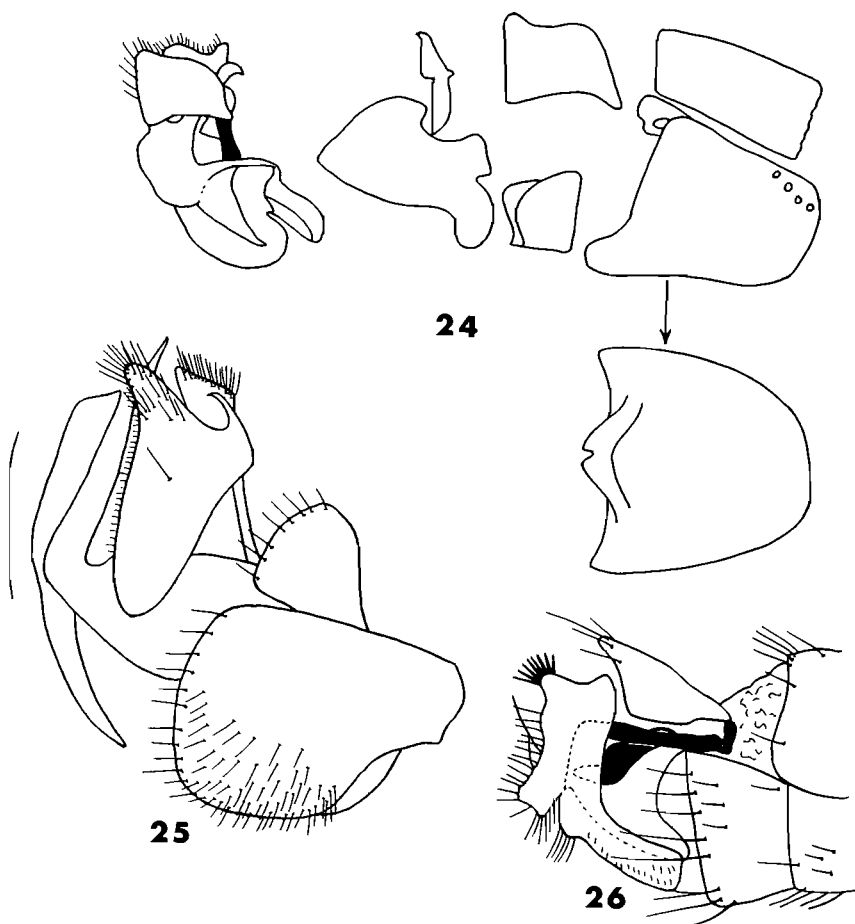
Abdomen: dull black and black haired, hairs longer at sides. Genitalia (fig. 25) black.

Legs: black with tibiae yellowish on less than basal half. Front femur with weak anteroventrals; middle femur with weak anteroventrals weak but longer posteroventrals and anterodorsals; hind femur with anterodorsals and weak anteroventrals. Front tibia with short anterodorsals and longer posterodorsals; middle tibia with long anterodorsals and posterodorsals and two anteroventrals in distal third; hind tibia with antero- and posterodorsal bristles, anteroventrals which are longer and stronger distally and some weak posteroventrals. Tarsi with long bristles above and below.

Wings: almost clear. Discal cell rather blunt ended, with both branches of discal vein ( $m_1$  and  $m_2$ ) abbreviated.

Length: 4.0 mm.

Holotype ♂, CAMEROONS: Nr. Vina River (13°35'E, 7°12'N), 8 August 1968 (*R. H. L. Disney*). In the British Museum (Natural History), London.



Figs. 24-26. (24) *Empis (Coptophlebia) cuthbertsoni* sp. n., male genitalia in lateral and 6th sternite in ventral view; (25) *E. (C.) vina* sp. n., male genitalia in lateral view; (26) *E. (C.) edwardsi* sp. n., male genitalia in lateral view.

***Empis (Coptophlebia) edwardsi* sp. n.**

♂ Head: black, dusted greyish. Eyes with upper facets obviously enlarged and touching for considerable distance above. Face about 3 times ocellar width, dull blackish. A pair of slender ocellar bristles. Occiput with long slender postocular bristles above, curved forward over eye-margins and some long hairs behind, below middle. Antennae blackish, first segment a little longer than second segment, both segments with short bristly hairs; third segment about as long as first and second segments together, narrowed at tip and with a terminal arista of about equal length. Proboscis yellowish-brown, a little more than twice as long as head is deep; palpi yellow with a dark bristle below near tip.

Thorax: black, lightly dusted greyish. Acrostichals biserial; dorsocentrals uniserial, becoming biserial behind; a humeral bristle with some weaker bristles in front, an intra-

humeral and a posthumeral; 2 notopleurals with a weaker bristle in front; a supra-alar with a weaker bristle in front; a long postalar. Scutellum with a pair of crossing apical bristles and a weaker outer pair. Prothoracic collar with a circlet of bristles. Prothoracic sternum with some rather long bristles on upper outer corner. Pleurae dark brown, lightly dusted greyish. Metapleuron with about 14 black bristles and hairs.

Abdomen: dark brown, clothed with silvery dust; black haired, longer at sides. Genitalia (fig. 26) blackish.

Legs: brown, front coxae yellowish-brown. Front and middle femora with weak antero- and posteroventrals, stronger though not very long anterodorsals; hind femur with long slender posteroventrals, shorter anterodorsals, otherwise similarly haired to other femora. Front tibia with weak anterodorsals, longer slender posterodorsals; middle tibia with stronger antero- and posterodorsals and a posteroventral at distal  $\frac{2}{3}$ ; hind tibia with rather long antero- and posterodorsals and anteroventrals. Tarsi bristly above and below.

Wings: clear, discal cell about  $\frac{3}{4}$  length of vein  $m_2$ . Halteres black.

Length: 3.0 mm.

Holotype ♂, UGANDA: Ruwenzori Range, Mobuku Valley, 2 130–2 440 m, 29–31 December 1934 (*F. W. Edwards*). In the British Museum (Natural History), London (B. M. 1935–203).

*Empis (Coptophlebia) machipandensis* Smith

*Empis (Coptophlebia) machipandensis* Smith, 1969, *Ann. Natal Mus.* 19: 145.

The 'furthest south' species of the group, distinguished by the following combination of characters: legs entirely black; antennae blackish with first and second segments yellowish tinged; wings clear; hind tibia with bristles above obviously longer than tibia is deep; upper eye facets obviously enlarged; abdomen yellowish at base; halteres with black knob.

Length: 3.5 mm.

Distribution: Mozambique, near Machipanda.

Known only from the holotype ♂ in the Natal Museum, Pietermaritzburg.

*Empis (Coptophlebia) sp.*

In the key this species would run to couplet 8, where it would at once separate out in having entirely black antennae. Unlike the females of *E. (C.) chrysocera* and *E. (C.) cuthbertsoni* the wings are clear. All legs are entirely black and at least partly pennate. It is better not described until associated males are available.

♀, NORTH NIGERIA, Zaria, Samaru, 15 August 1968, m.v. trap (*J. C. Deeming*).

REFERENCES

- BECKER, T., 1907. Die Ergebnisse meiner dipterologischen Fruhahrsreise nach Algier und Tunis, 1906. *Z. syst. Hymenopt. Dipterol.*, 7: 33–61, 97–128, 225–256, 369–407.  
 ——— 1909. Collections recueillies par M. Maurice de Rothschild dans l'Afrique orientale anglaise. *Bull. Mus. Hist. Nat. Paris*, 1909: 113–121.  
 ——— 1910. Voyage de M. Maurice de Rothschild en Ethiopie et dans l'Afrique centrale. *Annls Soc. ent. Fr.*, 79: 22–30.

- COLLIN, J. E., 1929. A new species of Empid fly taken at Morogoro, Tang. Terr., by B. B. Osmaston. *Proc. ent. Soc. Lond.* 4: 110-112.
- 1938. A new African species of *Rhamphomyia* with abbreviated discal veins closely resembling two new African species of *Empis* subg. *Coptophlebia* (Diptera, Empididae). *Proc. R. ent. Soc. Lond.* (B) 7: 81-83.
- 1953. A new species of *Rhamphomyia* Meigen (Diptera: Empididae) from Morocco. *Proc. R. ent. Soc. Lond.* (B) 22: 57-58.
- SAIGUSA, T., 1963. Some new species of the genus *Rhamphomyia* from Japan, with descriptions of two new subgenera (Diptera, Empididae). *Sieboldia*, 3: 131-166.
- SMITH, K. G. V., 1961. On the genus *Macrostomus* Wiedemann (Diptera: Empididae) with notes on the included species and new synonymy. *Proc. R. ent. Soc. Lond.* (B) 30: 53-56.
- 1967. Afrikanische Empididae (Dipt.). *Stuttg. Beitr. Naturk.*, 179: 1-16.
- 1969. The Empididae of Southern Africa (Diptera). *Ann. Natal Mus.*, 19: 1-347.

Date received: 19 February 1970